

NAPA COUNTY

SUMMARY GENERAL PLAN

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NAPA COUNTY CONSERVATION DEVELOPMENT & PLANNING COMMISSION
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INTRODUCTION

The growth issues involved in planning have become increasingly important. Growth pressure caused by migration to California and the consequences of development are evident throughout the state. Now, even northern California is experiencing polluted air, crowded highways, and sprawling cities. These problems have not yet reached massive proportions in Napa County, which is fortunate, because the County still has an opportunity to resolve such problems before they get out of hand.

To minimize the problems of growth and change and to comply with State Planning Law requirements, counties prepare General Plans to guide development and help create the kind of future their residents want. The Board of Supervisors and the County Planning Commission, in order to make certain that the County General Plan being considered reflects the public's views, decided that the question "what kind of a County should Napa County become" should again be opened for public discussion.

The Summary General Plan Report is being distributed throughout Napa County to provide the opportunity for everyone to comment on the growth issues and alternatives to be considered by the Board of Supervisors in the County's future General Plan. The problems and potentials of three different levels of growth are described.

You have a stake in the future of Napa County; and now you have a chance to say what type of community you want to live in today and leave for future generations. On Page 3 you will find a Response Form which you can use to express your opinion on growth and development issues. The Response Form can be mailed as is; no envelope is needed, postage is prepaid. While the Response Form is brief, the County would welcome any additional written comments you may wish to submit. All additional comments should be sent to the address shown on the front of the questionnaire form.

During the review period the Planning Commission will also hold public meetings so that you will have an additional opportunity to ask questions or present your views directly to them concerning the future of Napa County. All the information and comments received from the returned response cards, letters, and presentations made at public meetings will be considered by the Board of Supervisors and the Planning Commission in drafting the County's General Plan.

GOALS

Goals are important. Without them it is easy to lose sight of original objectives in making difficult but necessary decisions.

Long-range planning goals are usually general in nature, directed toward defining a common objective or concept the whole community supports. The goals included in the Summary General Plan have evolved over a number of years, and include the thoughts of many people who have been involved in the planning process in Napa County. Essentially the following goals stress the importance of maintaining and enhancing the open area, agricultural character, natural amenities and environmental quality of the County.

- GOAL 1 TO PLAN FOR THE COEXISTENCE OF AGRICULTURAL AND URBAN AREAS BY LIMITING URBAN DEVELOPMENTS TO AREAS SERVED WITH ESSENTIAL PUBLIC SERVICES AND FACILITIES AND BY PRESERVING PRIME FARMLANDS FOR PRESENT AND FUTURE AGRICULTURAL USES.
- GOAL 2 TO PLAN FOR A BALANCED AND DIVERSE HUMAN ENVIRONMENT.
- GOAL 3 TO WORK WITH THE CITIES TO PLAN FOR SERVICES, FACILITIES AND ACCOMMODATIONS INCLUDING HOUSING, TRANSPORTATION, OPEN SPACE, AND OTHER TOTAL COUNTY NEEDS.

POPULATION

Napa County presently has an estimated population of 87,000 people. Based on past growth in Napa County, by the year 2000 a population range of 114,000 to 220,000 could be anticipated. However, before considering future population levels, it is important to consider five factors contributing to the growth of the population in Napa County.

First, population levels are affected by the natural rate of increase—the difference between the number of people added by births and those subtracted by death. Due to the large institutional population in Napa County for elderly people, the natural rate of increase is of only limited value in determining future population levels. Births and deaths are affected by the local level of medical care and prevailing attitudes regarding marriage—desirable family size, birth control, etc. The sum of these attitudes is reflected in the birth rate, which nationally dropped about one-third since the introduction of birth control pills. At the national level, the Bureau of Census indicates that a continued low national birth rate may result in a stable population level (births and deaths about equal) after the year 2000. But between now and then the nation is expected to add at least 100 million people to its total population. Many of the new people will be born in, or will move to, California.

Second, the nationwide migration of people into metropolitan centers and toward warmer climates is likely to continue adding people to California in general, to the Bay Area, and to Napa County. During the 1960s, as many as 1,000 persons moved into California each day. In the seven-year period between 1965 and 1972, net migration into Napa County averaged 1,800 persons per year. A significant component of the migration into Napa County is the large number of elderly persons who move into the numerous resident care facilities and institutions found in

Napa County. Studies by the Association of Bay Area Governments predict Napa County, in the near future, will start absorbing an increasing proportion of regional growth as the rest of the Bay Area counties become more developed. That trend has started already. The most recent average annual growth rate for Napa County (3.5% from 1970 to 1973) is higher than that of the Bay Area as a whole (1.2% for the same period).

Third, commuting patterns are influenced by employment, transportation, and housing opportunities, and the willingness of individuals to commute from one location to other parts of the region can drastically affect growth. Thirty percent of all the employed Napa County residents in 1970 worked outside the County. One commuter in five—nearly 1,500 wage earners—was willing to travel as far as Oakland to find work and commute 60 to 80 miles each day in order to live in Napa County. How much effect changing interest rates, transportation costs, gasoline shortages, traffic congestion, rapid transit, and so-called "urban" problems of overcrowding, crime, and pollution will have on commuters in the future is difficult to assess. However, regional planners believe that the number may increase in the future.

Fourth, as a result of the 1973 growth referendum, the City of Napa is likely to lower its growth rate. By a 2 to 1 margin, voters indicated a desire to slow growth in general and to encourage inner city growth before annexing outlying lands. Nearly 3 out of 4 voters chose a peak population (75,000) approximating that of present-day Santa Rosa (the smallest of four options on the ballot). The City of St. Helena has also declared its intention to limit growth to 50 new residences or less per year. The results of both cities' policies are incorporated into the Summary General Plan.

Fifth, the concern for minimizing pollution and preserving farmland can have a large impact on Napa County, which presently is (a) part of a growing metropolitan area; (b) relatively undeveloped; and (c) an area whose present use of prime farmland is economically competitive with urban development. Preservation of the prime farmland in the Napa Valley would restrict the amount of land available for development, which would affect the pattern and scale of future population growth. Conversely, should the wine industry decline, vineyard owners in Napa County might want to subdivide portions of the valley for residential development.

Using the preceding factors in varying degrees within the last 5 to 10 years, a variety of State and regional governmental agencies have made population projections for Napa County that range between 115,000 and 253,000 persons. (There are 14 choices between the high and the low figures). For the purposes of the Summary General Plan three of the 16 projected population levels were selected as target figures to show what would be the likely consequences of different growth levels by the year 2000. All development concepts reflect the goals listed on Page 1—chiefly that growth would be concentrated in existing cities.

The following sections of the report detail the needs and consequences by the year 2000 of growth from a low population figure of 115,000 people, to a high population figure of 200,000 people. As you read further, consider which alternative more closely describes the Napa County you feel you want to live in and leave to the future citizens. At the bottom of Page 3 is the response form where you can express your preference on the issues of growth.

A County can shape its future, once it has determined what kind of a future it wants to achieve. Here's a chance for you to say what you want Napa County to be like in the future.

CONSEQUENCES OF GROWTH BY YEAR 2,000 ----- (Current Population: 87,000)

LOW GROWTH - 115,000 PEOPLE

- If a low growth option is selected:
- a) The City of Napa would have to limit its development. Minimum lot sizes would have to be larger and apartment densities would have to be reduced.
 - b) The cities of Yountville, St. Helena, and Calistoga could develop according to their preliminary (limited) growth policies and the capacity of their current sewer and water systems.
 - c) Growth in the unincorporated areas of the County would have to be limited to approximately 20 residences per year.

GROWTH RATE The average annual growth rate that these conditions would produce is about 1%. For every three people living in the County today there would be four in the year 2000.

TRAFFIC Assuming that existing employment centers grow in proportion to population growth and that future commuters feel the same about car pools and transit as they do today, congestion on existing highways would be greater than it is today. For example, State Route 29 south of the City of Napa would have to handle about 3,000 more commuters than it did in 1970. The additional traffic could be accommodated by adding another lane in each direction to the existing highway.

SCHOOLS The existing schools in the County serve a student population of 17,400 students. There is space for 19,000 students, if all schools were used to their full capacity. If Napa County's population grew to 115,000 and the ratio of school children to entire population remained constant, there would be a need for additional school facilities for 3,800 more children. That would be the equivalent of building two new school systems the size of the present St. Helena Unified School District system. In addition to the space needed to serve a growing population,

approximately one-quarter of the schools existing today will have to be reconstructed or replaced by the year 2000, due to deterioration and obsolescence.

WATER SUPPLY Existing public water supplies are adequate to meet the needs of a low growth option.

SEWAGE DISPOSAL Necessary improvements in sewage disposal facilities would be due to the adoption of more stringent pollution control standards by State and regional agencies rather than expansion.

HOUSING In order to accommodate a county-wide population of 115,000 people an additional 9,300 new residences would have to be provided. Due to the limited volume of new construction, there would probably be more buyers than houses for sale. The end result of such an imbalance would be a rise in the cost of housing. Expected residential development in the unincorporated area could occupy as little as 60 acres (on small lots served by water and sewer) or as much as 1,800 acres (on 5 acre lots). By comparison, 60 acres of land is equal to the area between Napa River and S. P. Railroad north of Imola Avenue and south of the Third Street bridge. An area slightly less than 1800 acres is bounded by the Napa River and Route 29, south of Imola Avenue and north of the County Airport.

LAND CONSUMPTION Expanded zoning and subdivision controls would be needed in the unincorporated areas to limit the subdivision of land and development of new homes. In return for the acceptance of such development restraints, the County could retain its present open space character; the valley floor could be preserved for agricultural production.

ADVANTAGES:

- 1. Rural character of Napa County would be preserved; best chance for continuation of vineyard, winemaking, and livestock industries.
- 2. Maintenance of a high resale market for housing units in Napa County.
- 3. Best chance to maintain environmental quality.
- 4. Least expensive in terms of additional taxes needed for construction, operation and maintenance of new public facilities and services (sewer, water, schools).

DISADVANTAGES:

- 1. Napa County would have to enact and enforce strict regulations on subdivision and development activities.
- 2. Housing would become even more scarce and expensive than it is now.
- 3. Employment opportunities, particularly in construction and land development industries, would be limited.

MEDIUM GROWTH - 150,000 PEOPLE

If the medium growth option is selected:

- a) The City of Napa could grow to 75,000 residents.
- b) The cities of Yountville, St. Helena, and Calistoga could develop according to their preliminary growth policies and the capacity of their current planned water and sewer systems.
- c) Growth in the unincorporated areas of the County would require the addition of 320 new residences per year.

GROWTH RATE The average annual growth rate would be close to 2%, which approximates the County's 1960's growth rate. For every three people living in the County today there would be five in the year 2000.

TRAFFIC Congestion on most arterial roads would increase to a visible degree. Assuming the location of employment centers and the habits of commuters do not change from 1970, State Route 29 south of the City of Napa would have to handle about 6,000 more commuters. To alleviate the congestion on Route 29, either two lanes would have to be added in each direction, the highway would have to be converted to a limited-access freeway, or more commuters would have to rely on public transit.

SCHOOLS The existing schools in Napa County would not be adequate to serve a population of 150,000 people. The additional 30,000 school children that could be anticipated would exceed the current school capacity by 11,000 students. This number is equivalent to the existing Calistoga and St. Helena Unified School Districts, plus half the existing Napa Valley Unified School District. Additional replacements for deteriorated or obsolete buildings would also be necessary.

WATER SUPPLY Growth in up-valley cities is related to the capacity of existing water systems. Current information indicates the City of Napa has

the potential water supply to serve between 75,000 and 100,000 people. American Canyon has a potential water supply large enough to serve a population of 21,000 people. While water treatment facilities could limit short-term expansion, the American Canyon Water District and the City of Napa could support an accelerated growth rate in the southern part of the County.

SEWAGE DISPOSAL Existing sewage disposal systems in Napa County ("municipal" systems plus private septic tanks and drainfields) cannot serve much more than 120,000 people. Any additional population would require improved, expanded, or additional systems. If growth is dispersed over large areas it will be very expensive to provide necessary sewers; many new homes would have to rely on septic tanks and drainfields.

HOUSING In order to house a population of 150,000 people, an additional 21,000 residences would have to be built in the County. Since the City of Napa is expected to limit the City's growth to about 75,000 people, and up-valley cities are limited by water supply, sewage disposal and preliminary growth policies, about 9,000 residences would have to be located in the unincorporated areas of the County.

LAND CONSUMPTION If all the 9,000 additional residences in unincorporated areas were served with water and sewer services (shared between the Napa Sanitation District and the American Canyon County Water District) they could occupy as little as 1,500 acres of land. That would be equivalent to the area north of the County Airport, bounded by Napa River, Imola Avenue, and Route 29. If, however, water and sewer services cannot be provided for new residents in the unincorporated areas, residential lot sizes of one to five acres could be required and from 9,000 to 45,000 acres of land could be occupied by new residences.

ADVANTAGES:

- 1. Rural character could be maintained with expanded land use controls such as zoning, subdivision regulations, etc.
- 2. New growth and development would contribute to the local economy and would provide new jobs.
- 3. All developments could be served by expanded public water systems without requiring new supplies or new water treatment systems.
- 4. Would provide greater variety in cost and character of housing.

DISADVANTAGES:

- 1. Rural character could be lost if land use controls were not enforced.
- 2. Some new development would extend into agricultural and hillside areas.
- 3. Would require additional tax revenue to pay for new schools and related facilities.

HIGH GROWTH - 200,000 PEOPLE

If the high growth option is selected :

- a) The City of Napa's growth would be limited to 75,000 people.
- b) The cities of Yountville, St. Helena, and Calistoga would develop to the maximum capacity of their current water and sewer systems.
- c) Growth in the unincorporated areas would require the addition of 920 new residential units per year.

GROWTH RATE The average annual Countywide growth rate would be close to 3%. For every three people living in the County today there would be seven in the year 2000.

TRAFFIC All arterial roads in the County would experience some congestion. Assuming the location of employment centers and habits of commuters do not change, State Route 29 south of the City of Napa would have to handle about 10,000 more commuters. To handle the additional traffic, State Route 29 south of the City of Napa would have to be converted to a limited-access freeway. Congestion could be eased by increased use of car pools or public transit. However, improved public transit could spur additional residential development in the same manner that BART has affected many East Bay areas.

SCHOOLS The current Napa County Schools would accommodate less than half the students generated by a population of 200,000 people. Napa County would have to build again, in 26 years, as many schools as it built in the past 60 years. Many existing buildings would also have to be replaced due to deterioration and obsolescence. If Napa County develops into even more of a (non-industrial) residential community than it presently is, homeowners would find their property taxes steadily increasing, due to the need for funds to finance new school facilities and services. Failure to construct new schools has caused some communities, like Petaluma, to resort to half-day sessions and others, like Fair-

field, to experiment with year-round operation of school facilities.

WATER SUPPLY A total population of 200,000 would require that an additional 74,000 people reside in the unincorporated areas of the County. Existing and contracted water supplies in the unincorporated areas (American Canyon, Angwin, and elsewhere) could serve only about 50% of such an increase; the other half would be dependent on wells or the development of new or expanded public systems. Increasing the amount of water used from wells in a given area could result in lowering the water table for existing wells.

SEWAGE DISPOSAL Substantial growth in unincorporated areas would involve the location of a large number of homes in areas not served by sewers. Since large areas of Napa County are unsuitable for use for septic tanks and drainfields, widespread health problems could develop. (See "Sewage Disposal" section and "Physical Features Composite Map" on reverse page.)

HOUSING In order to house 200,000 people in Napa County an additional 37,600 residences would be needed. An increase of that-size over 26 years is equivalent to adding a new community the size of Yountville every year.

LAND CONSUMPTION Assuming there would be a shortage of adequate public water and sewer services, as many as 25,000 residences might have to be located on suburban or rural lots. Between 25,000 and 125,000 acres of land might be required to house the new suburban or rural population. An area the size of 25,000 acres is bounded by the Napa River and the ridge line east of Route 29 from Imola Avenue to the City of Vallejo. An area the size of 125,000 acres is bounded by Silverado Trail and the western boundary of Napa County, from Calistoga to San Pablo Bay.

ADVANTAGES:

- 1. Maintenance of a high growth rate provides an expanding economy to insure the greatest number of jobs.
- 2. Expanded housing supply would provide residents with the greatest range of selections and costs.
- 3. Little change in 1955 subdivision and developments standards would be needed.

DISADVANTAGES:

- 1. Loss of present character of the County; even with careful land use controls, housing would be spread throughout the County.
- 2. Greatest potential for loss of winemaking industry, decline in livestock industry, and conversion of large areas of farmland to urban use.
- 3. Taxes would have to be increased to pay for construction of new public facilities (additional schools, water and sewer facilities and expanded government services).
- 4. Expanded development utilizing wells and septic tanks could create health hazards.

COMPARISON OF GROWTH ALTERNATIVES					
		Total County	Unincorporated	City of Napa	Combined Total of Yountville, St. Helena, and Calistoga
Low Growth	Population	115,000	35,600	66,000	13,400
	Increase from 1973	28,000	1,000	21,800	5,200
	Total Housing Increase	9,330 D.U.	350 D.U.	7,250 D.U.	1,730 D.U.
	Yearly Housing Increase	350 D.U.	20 D.U.	270 D.U.	60 D.U.
Medium Growth	Population	150,000	60,600	75,000	14,400
	Increase from 1973	63,000	26,000	30,800	6,200
	Total Housing Increase	21,000 D.U.	8,680 D.U.	10,250 D.U.	2,070 D.U.
	Yearly Housing Increase	780 D.U.	320 D.U.	380 D.U.	80 D.U.
High Growth	Population	200,000	108,600	75,000	16,400
	Increase from 1973	113,000	74,000	30,800	8,200
	Total Housing Increase	37,600	24,600	10,250 D.U.	2,750 D.U.
	Yearly Housing Increase	1,400 D.U.	920 D.U.	380 D.U.	100 D.U.
POPULATION IN 1973		87,000	34,600	44,200	8,200

NOTES:

- 1. D.U. are Dwelling Units
- 2. The effect of possible annexation of "County islands" has not been shown on this chart. Annexations by the City of Napa would have the effect of raising the "housing increase" allocated to the "unincorporated" column.



AREA IDENTIFICATION

- 1. West Ridge of Napa Valley
- 2. Upper Napa Valley, Deer Park, Angwin
- 3. East of Napa Valley, Lake Berryessa
- 4. City of Napa and Immediate Surrounding Area
- 5. Carneros Area
- 6. East Bank of Napa River from State Hospital to Solano County Line

IN MY OPINION – RESPONSE QUESTIONNAIRE

1. Including a maximum population for the City of Napa of 75,000, the total population for Napa County in the next 25 years (Choose one)
 - ☐ A. Should not be allowed to exceed 115,000
 - ☐ B. Should not be allowed to exceed 150,000
 - ☐ C. Should not be allowed to exceed 200,000
 - ☐ D. Should not have any limits
2. Future urban type business and housing developments in Napa County (Choose one)
 - ☐ A. Should be limited to areas located inside the County's existing cities where needed facilities and services can be provided most efficiently.
 - ☐ B. Should be limited to those areas having adequate water and sewers.
 - ☐ C. Should be allowed to locate wherever it wants to subject to meeting established development standards.
 - ☐ D. Should be stopped in the unincorporated areas.
3. The present open agricultural character of Napa County (Choose one)
 - ☐ A. Should be maintained and protected even if there is some public cost involved.
 - ☐ B. Should be retained only if it can pay its own way.
 - ☐ C. Is not important.
4. The most important consideration(s) to be included in the County General Plan are:
 - ☐ A. Bringing more industry and business to provide more jobs and tax revenues.
 - ☐ B. Retaining the unique quality of living that currently exists in Napa County.
 - ☐ C. Providing for a diverse human environment.
5. I live in area ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

FEATURES TO CONSIDER IN LOCATING FUTURE DEVELOPMENT

NATURAL SUITABILITY

Land is as variable in its character as people are different from one another. However, most people think of land as a uniform commodity. It is described in "acres" and "locations" and primary attention is given to its "improvements" rather than to the sum of its natural characteristics, referred to here as its natural suitability.

The variable characteristics of land are a result of natural forces that are described by laws of physics in terms of geology, hydrology, and biology. These characteristics should be considered thoroughly; no one should assume that natural forces can be overcome easily and that man is exempted from the laws of nature.

To understand natural forces and conditions, consider the natural variation in topography (slopes, elevations, land forms, drainage), soils (depth, particle size, acidity, fertility), climate (sun, wind, rain) and biota (plant cover, animal life). From only a short list of characteristics important variations in land can be distinguished. Knowing the variations, it is possible to determine what the land is best suited for and to match man's activities to the land's natural suitability. Such an approach takes advantage of the land's natural capability; it minimizes conflicts with natural forces and hazards to life and property.

The following characteristics are considered to be important.

STEEP SLOPES

Several reasons can make the choice of home sites on steep sloped areas inadvisable.

First, each of the soil associations produced by weathering of the underlying parent rock has a characteristic maximum slope, or steepness, beyond which they are unstable. Much of the land in California in general and Napa County in particular lies on slopes that approach the upper limit of stability. Seasonal rains and earthquakes can trigger landslides which can result in extensive damage to the land and any building on the land. By terracing slopes of marginal stability for home sites the equilibrium established through centuries of weathering and erosion can be upset. Whether grading activity is enough to trigger a landslide is a matter of probability. The probability is determined by the slope created, the composition and compaction of the soil, the degree of water saturation, and the relatively unpredictable effect of an earthquake. Estimates of landslide damage in the Bay Area run to millions of dollars each year.

Second, the potential for soil erosion is increased when an otherwise stabilized slope is used as a building site. Increased soil erosion in turn causes sedimentation of existing streams and generalized disruption of the local hydrology which may result in increased flooding, decreased percolation and lowered water tables. Wherever steep slopes are developed as building sites, erosion should be controlled by the retention or introduction of trees, brush, and grass. The planting of vegetative cover on bare, highly erosive areas should be undertaken as a conservation measure wherever possible.

Third, as the slope angle increases, the possibility of using on-site sewage disposal systems decreases. In general slopes greater than 9% are considered to have severe limitations for drain fields. (See "Sewage Disposal.")

Fourth, road construction in steeply sloping areas is expensive and difficult and provisions of emergency services are a real problem.

Each of the preceding considerations becomes more acute as the percentage of land slope increases. For purposes of the County General Plan the acceptable limits of slopes for urban use has been set at 15%. Slopes in excess of 15% are generally considered unsuitable for development. Although remoteness, adverse soil conditions for foundations, erosional problems, circulation, and utility problems are not insurmountable obstacles to development, they require costly and continuous maintenance practices which in many cases are paid by the general public. Alternative uses such as controlled recreation, wildlife management, or agriculture should be encouraged on land having extensive or unusual construction limitations.

WETLANDS

Those areas bordering San Pablo Bay identified as wetlands as early as 1850 are shown on the map on page 6. Some of these areas have been filled, dredged, diked, and drained in the past century, but beneath the fill and behind the dikes there is still bay bottom mud.

Waterfowl, fish, and crabs hatch/spawn and grow in the tideland areas. Numerous species of animals find refuge in Napa County in the wetlands; among them the White Tailed Kite, several Rails, and on rare occasions, the Peregrine Falcon. Fishermen catch the Striper and the Smallmouth Bass which live part of their lives in the tidelands while birdwatchers and hunters look for the waterfowl that nest in and fly through the marsh areas. During winter months, the tidelands serve as natural reservoirs for flood waters.

Current uses of the wetlands include salt extraction, hay production, airspace for the County airport, and a solid waste disposal site. Air temperature is more constant and the air has less suspended dust and grit as a result of its passage over the wetlands. If the remaining wetlands were all diked and drained, the air temperature of Napa Valley would be hotter in the summer and colder in the winter. If wetland areas were urbanized, the summer temperatures in Napa Valley would rise and the air would contain more pollutants than if the area remained in its natural state.

The most compelling reason to keep urban uses off the wetlands is the potential earthquake hazard to buildings placed on unconsolidated sediments, especially soil saturated with water. The wetland areas having underlying strata of several hundred feet of bay mud are subject to intensified shock wave action during an earthquake. Even though the surface of such lands may be covered with fill which appears very solid, the mud beneath can move like water in a wave-like fashion during an earthquake. The engineering improvement required to protect residents from this hazard is difficult to predict. Experience gained in San Francisco during the 1906 earthquake and the more recent Alaskan earthquake indicates that buildings located on such sites suffer the greatest damage.

By allowing the urbanization of wetland areas endangered plants, animals, and birds are moved one step closer to extinction, large areas of open space are eliminated, climatic balances are changed, and the health and welfare of the general population may be jeopardized. It would be better to locate urban development elsewhere, prohibit urban use of wetland areas, retain them in their present condition, and return unused land to a natural condition.

SEISMIC HAZARD

The San Andreas Fault Zone runs parallel to and 30 miles west of the Napa Valley. Major slippage along that fault can create earthquakes some distance away. In 1906, Santa Rosa suffered severe earthquake damage even though the San Andreas Fault Zone was 20 miles distant and the epicenter was even farther away. Geologists believe that the impact was amplified partly because Santa Rosa is located on saturated, unconsolidated soil. A similar soil condition exists in the Napa Valley. Pockets of unconsolidated alluvium to a depth of as much as 800 feet can be found locally.

On the Bay end of the valley, water-saturated soils could actually liquify during an earthquake. The land would move in a wave-like motion. (See section on Wetlands.)

Several minor fault zones located in Napa County are currently considered "semi-active" by the U.S. Geological Survey. Records of earthquakes between 1946 and 1966 show numerous epicenters in Napa County. Twenty epicenters were clustered near the east County boundary along Blue Ridge north of Putah Creek and the north slope of Vaca Mountain. Another pattern of 23 epicenters extended from Cedar Roughs Ridge in a line through Capell, Gordon, and Suisun valleys. An equal number of epicenters were scattered along the ridges west of the Napa Valley between Mount Veeder and Diamond Mountain.

These minor faults are important because even slight movements could cause landslides on nearby slope areas having unstable soil. More than one fifth of Napa County is classed by the Soil Conservation Service as being critical for soil slumps because of weak subsoil. Soil slump condition can be magnified by steep gradients, excessive ground water, and unstable base rock. One example of such an area is the Circle Oaks Subdivision in which roads, building lots, and even water and sewer lines were severely damaged by land slumping. To overcome the poor soil condition a substantial amount of additional financing was required to restore the subdivision to a usable condition.

PERIODIC FLOODING

In the past large portions of Napa County have been subject to flooding. Some of these areas can be identified by soil surveys or public works, but the best determination of flood plain areas was done in 1971 when the United States Geological Survey and the Army Corps of Engineers determined the hydraulic cross section and spread of flood waters for a 100-year flood in the Napa Valley. (See map on page 6.) A 100-year flood is one that can be expected to occur once every 100 years.

Areas that have been flooded during the County's geologic past have taken on several identifiable characteristics. The soils laid down under flood conditions have a high silt and clay content. The importance of that fact today is that as the clay content of the soil increases, the soil becomes less permeable to water and less suitable for septic tanks and drainfields.

When clay soil gets wet, it expands, and when it dries, it shrinks. The more a soil expands and shrinks the more it can damage building foundations. Some clay soils corrode water and gas pipes, increasing long-term maintenance costs. Clay soils are not suited for most landscaping uses. Shallow-rooted plants in particular require extra care in clay soils. All these factors limit the use of flood plain areas for low-density urban uses. However, plants with deep roots, such as fruit trees and grape vines, are productive in flood plain areas. Occasional flooding of an agricultural district creates a fraction of the disruption and property damage that would occur if the same area were urbanized.

For years, the Army Corps of Engineers and the Soil Conservation Service have worked to hold flood waters upstream and channel their flow downstream. But increased construction in flood plains and the increased runoff from roof tops, streets, parking lots, etc. have increased rather than decreased the danger of flood damage. The Corps now stresses flood plain management, namely, encouraging building outside or above flood plain areas.

If urban development is kept out of flood plain areas and the rate of runoff from hillside watersheds is stabilized, the need for expensive flood control projects and the damage to homes and businesses can be minimized. However, if urban development is allowed in flood plain areas, and runoff from the hills upstream is accelerated, the need to reestablish equilibrium between channel and floodwaters will continue indefinitely.

AVAILABILITY OF WATER

Maps compiled by the U.S. Geological Survey have been used on page 6 to show areas of inadequate ground water supply. Water supplies may be inadequate due to lack of public utilities, low flow from wells, or contamination of the ground water by nitrate, boron, or other dissolved solids. Wherever there are no existing or probable public water supplies, development puts demands on underground water supplies; but these supplies can be depleted by excessive use. For urban developments in the unincorporated area the County discourages reliance on underground water supplies.

There are generally two types of geologic formations where underground water, found in Napa County. The more productive type is located under the agricultural valley floor, and consists of alluvial deposits. The storage and productivity of alluvial valleys is dependent upon the length, depth, and width of the alluvium, as well as the porosity of fill. The greatest yield of groundwater is found in the Napa Valley and lesser yields are found in other valleys such as Capell, Pope, Chiles, and Browns Valley. The less productive type of formation is found in the hill and foothill areas where the geology consists typically of impermeable fractured rock. Well yields in these areas are dependent upon finding fractures or veins of porous material during drilling.

About 60% of the County is underlain by impermeable rocks having limited storage capacity. Wells drilled in these areas may be dry or have greatly reduced yields during summer and autumn months.

The quality of water in the alluvium fill is generally of better chemical quality than in the rock formations because in the rock formations many minerals leach out of the rock and dissolve in the water. Two of the most troublesome minerals in Napa County are iron and boron. Iron is prevalent in various areas of the County in the water-bearing rock formations, or in the shallow alluvium deposited adjacent to, and receiving some water from, the rock areas. Boron is generally found in the northern portion of the Napa Valley in the rock formation which underlies the shallower alluvium areas and is usually associated with faults and geothermal activity. Additional problems are caused by salt water intrusion from the Bay near the lower Napa River. Special construction, maintenance, and water-quality monitoring techniques are needed to assure trouble-free operation in this type of situation. The Alameda and Santa Clara valleys has experienced salt water intrusion and land subsidence resulting from over-pumping.

Ground water recharge areas should be protected from urban encroachment because of the need to replenish the underground water supply to protect the present water quality and prevent existing wells from going dry. Additional data are needed to determine base-line standards and long-term recording procedures for reservoir, ground and surface water quality monitoring, rainfall, and temperature records.

SEWAGE DISPOSAL

Napa County prefers to have new development connected to sewer systems, rather than using on-site sewage disposal systems which require septic tanks and subsurface filter fields. How well a sewage disposal system works depends largely on the rate at which the septic tank effluent moves into and through the soil. The percolation rate is affected by permeability of the soil, water table, and the maintenance of aerobic conditions in the subsurface disposal field to retard soil clogging. Areas of Napa County that are generally unsuitable for on-site sewage disposal are indicated on Page 6.

More precise information is available from the Napa County Health Department, whose responsibility includes determining standards for septic tank and filter field installation. The Health Department, using Soil Conservation Service data, describes three degrees of limitation for on-site sewage disposal: slight, moderate, and severe.

The installation of septic tanks and subsurface disposal fields are not allowed in soils having severe limitation, with the exception of slope criteria, unless a special sewage disposal system can be designed to overcome the limitations. Subsurface disposal fields should not be installed on slopes of over 10% if the class of soils has erosion hazards, unless special features can be designed to prevent erosion, and under no condition on slopes exceeding 20%.

PRIME FARMLAND

Soils listed by the U.S. Soil Conservation Service as being in capability Class I and II are designated as prime farmland. These soils are found locally in the Capell, Chiles, Gordon, Napa, and Pope valleys, the Angwin community, and the eastern shoreline of

Lake Berryessa. Prime farmlands are characterized by fertile soils of adequate depth (generally, 5 feet or more), good drainage, low clay content, slight or no soil erosion hazards, subsoils and substratum of more or less the same texture as surface layers and slope less than 2%. Other factors for high agricultural productivity are good air quality, lack of frost pockets and cold areas, and a location with suitable fog and rainfall frequency and moderate wind velocities.

Several reasons exist for preserving prime agricultural land from urbanization. Preservation of the limited supply of prime farmland is necessary for the maintenance of the County's agricultural economic sector.

The California State Legislature has found that the discouragement of premature and unnecessary conversion of prime agricultural land to urban uses is a matter of public interest because it limits urban sprawl and incompatible adjoining land uses which unnecessarily increase the costs of community services. Experience in Los Angeles and the Santa Clara and Salinas valleys has shown that prime farmland is, from a developer's standpoint, eminently suitable for development and that agricultural uses usually give way to urbanization. In Napa County, however, there is a high probability that normal economics may be able to preserve the vineyards on prime farmlands whose scenic beauty is appreciated by both residents and tourists to our famous wine country.

INACCESSIBILITY

Large areas of the County (as indicated on the map on Page 6) are remote and inaccessible from employment and service centers. Even emergency services such as ambulance, police, and fire protection are difficult to provide in such areas. Water and sewer services are not available. Excepting farmers and ranchers, whose jobs are tied to the land, persons living in remote areas usually generate unnecessary increases in road usage, fuel consumption and exhaust emissions with resultant detrimental impact on air quality.

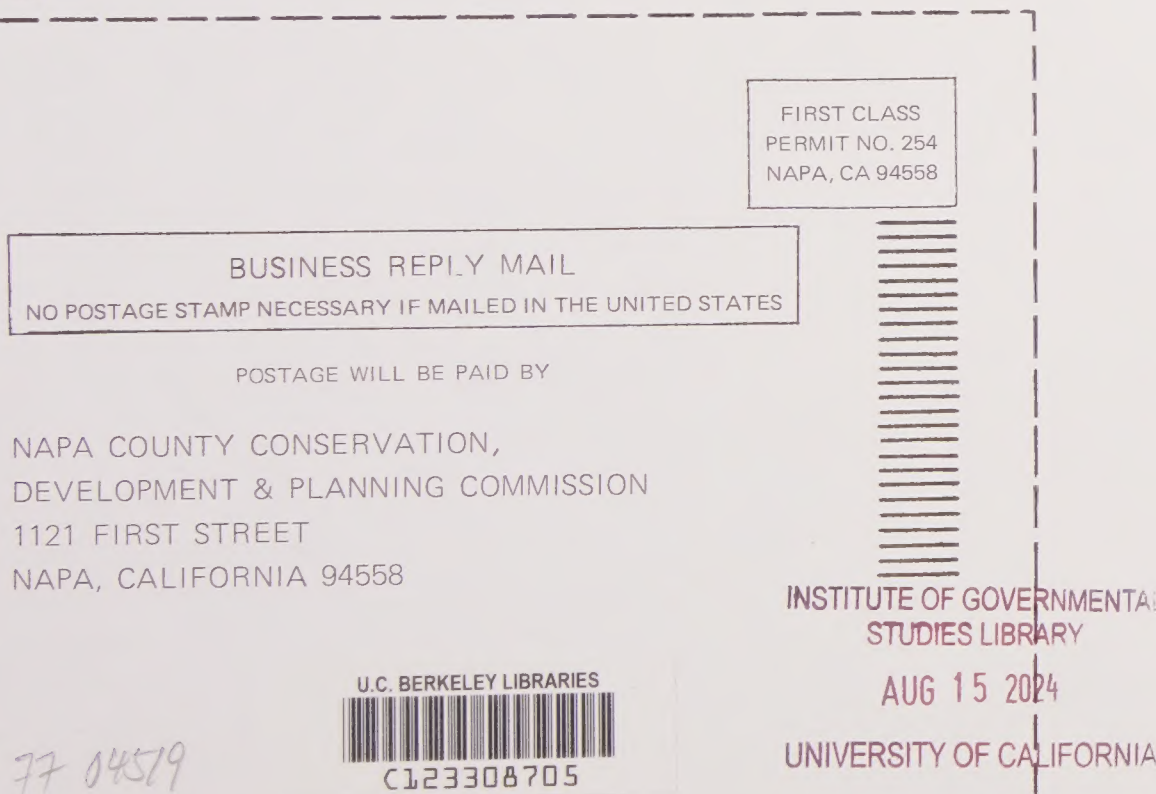
Rural commuters could find themselves stranded if fuel shortages get worse. The general public could be called upon to pay for costly reconstruction if roads intended for rural use have to be widened, straightened, and resurfaced to accommodate residential traffic.

FIRE HAZARD

Due to the combination of the vegetation types, fuel accumulation, high summer temperatures, and the seasonal moisture loss, most of the hilly areas of Napa County are potential wildfire locations six or more months out of the year. The 1964 fire that ranged from Calistoga to Santa Rosa... and took a week to extinguish... is one example of such a fire. The potential hazard to buildings in remote areas is obvious; each year hundreds of homes in California are destroyed by wildfires. Implementing the planning goal of discouraging low density residential development in heavily fueled woodland, grass and brush areas will reduce the potential fire hazard to County residents.

Programs for protection against fire hazard should include consideration of topography, land use, traffic flow, safe access, water supply, use of fire resistant building materials, clearly designated street names and numbers, emergency heliports, controlled burning, fuel breaks and clearance of vegetation around structures and roadsides which does not contribute to soil erosion or scenic degradation.

Cut along dotted line



PUTTING IT ALL TOGETHER

Once you have an awareness of the natural suitability of land, based on a careful study of the preceding factors plus other related information, how can the information be translated into planning decisions?

By knowing where urbanization would be faced with the greatest number of problems, new development can be limited in those areas. By determining what land is best suited for vineyards, orchards and forests, what land is unsafe for building, what land is most suited for grazing cattle and sheep, where businesses and people can be located, man can live in closer harmony with nature.

If urban development is to be concentrated (Goal 1) what areas are most suited to urban use? Where can essential services be provided? How can problems of providing housing and transportation be minimized; how can open space be preserved? (Goal 3.)

One answer to these questions is shown on the Physical Features Composite Map on the opposite page. The Physical Features discussed earlier are indicated as overlays composited on an outline of Napa

County. The resulting map shows the relationship of limiting factors for urban development throughout the County. The darker the shading is, the more reasons there are to limit urban development in those areas. Water areas are shown in black. Some lands are suitable for more than one use.

Although the Physical Features Composite Map is generalized, it does provide some guidelines for use in the preparation of the County's General Plan. These guidelines—along with other physical, social, and economic considerations—will be considered in the preparation of the General Plan. As an important part of the process, comments received from the public will be tabulated and cross-referenced to provide the Planning Commission and the Board of Supervisors with a greater awareness of the public priority in regards to issues related to the contents of a General Plan.

You can help by taking the time to complete the Response Form on Page 3.

ON A PHYSICAL FEATURES COMPOSITE MAP

